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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/590,018

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Seishiro Murakami

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EXAMINER

DURAND, PAUL J

ART UNIT

PAPER NUMBER

1797

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/590,018	<b>Applicant(s)</b> MURAKAMI, SEISHIRO	
	<b>Examiner</b> PAUL J. DURAND	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____.                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____.  | 6) <input type="checkbox"/> Other: ____.                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lloyd (US 6,083,386) in view of Ichiki et al. (JP 10-085771).

**Regarding claim 1**, Lloyd discloses a method for clarification of sludge (C1/L13-15) comprising, separating waste fluid raw solution to solid and liquid by a solid-liquid separator (Fig 1, C3/L66 - C4/L1-8; See inclined screen separator 5 and roller press separator 6) and a first filtration apparatus (Fig 1, C4/L13-14; See first filter 8). The reference further discloses (Fig 1, C4/L39-45) that filter feed line (15) leads to a first pathogen treatment tank (16), which, in this embodiment, is equipped with a chlorinator

Art Unit: 1797

(17). The stream flowing from the first pathogen treatment tank (16) is pathogen-free wash water, and may be treated using an odor control injection system (24) before it feeds into the flush tank (2). Additionally, Lloyd discloses that (C7/L31-36) pathogen removal can be accomplished using a variety of processes known to those of ordinary skill in the art, including chlorination, oxygenation, reverse osmosis and UV radiation.

Lloyd does not disclose treating the obtained liquid state product by an ozone treatment and a specific ray treatment simultaneously.

Ichiki discloses a method and apparatus which employs aeration combined with an ultraviolet discharge lamp having an emission spectrum in the range of 185-254 nanometers to simultaneously treat livestock wastewater discharged from cow or pig barns with UV radiation and ozone (Fig1, Abstract, Detailed Description of the Invention paragraph [0001]). It should be noted as an aside that UV radiation at 254 nanometers scrambles DNA coding in bacteria and viruses rendering them unable to reproduce and UV radiation in the range 218-220 nanometers produces ozone upon interaction with oxygen in the air, which then generates highly reactive hydroxyl radicals which oxidize organic compounds. Ichiki further states (See Effect of the Invention) that [by this method] the barn effluent is decolorized, there is a bactericidal effect, a reduction in COD and BOD occurs and offensive odor is reduced.

Lloyd and Ichiki are combinable since they both deal with the same field of endeavor, namely treatment of waste effluent from livestock.

Given that 1) Lloyd recognizes the need for both pathogen removal and odor reduction of the filtered wastewater and 2) Lloyd recognizes that pathogen removal can

Art Unit: 1797

be accomplished using a variety of processes known to those of ordinary skill in the art, including UV radiation, it would have been obvious to one of ordinary skill in the art at the time of the invention to replace Lloyd's pathogen removal and deodorizing method/system (Fig 1- 16,17 and 24) with Ichiki's method/system which simultaneously employs UV radiation and ozonation to sterilize, decolor and deodorize, in order to enhance and simplify the method/system of Lloyd.

**Regarding claim 2**, modified Lloyd discloses all the limitations set forth above. Additionally the reference discloses the method for clarification of sludge of claim 1, wherein the specific ray is a ray which has wavelength of the range from ultraviolet ray region to near-ultraviolet ray region (This limitation is met as shown in the discussion above.)

**Regarding claim 3**, modified Lloyd discloses all the limitations set forth above. Additionally the reference discloses the method for clarification of sludge of claim 1, wherein waste fluid raw solution is wash water from a pig shed, a cowshed or a chicken house, or waste wash water from a butchery, or processed foods liquid of over relishing period, such as coffee, Sake or Shochu (This limitation is met as shown in the discussion above).

**Regarding claim 4**, modified Lloyd discloses all the limitations set forth above. Additionally, Lloyd discloses the method for clarification of sludge according to claim 1, wherein solid obtained by a solid-liquid separator and a first filtration apparatus is used as a soil conditioner (C5/I8-10; See solids are separated from the waste stream by the separators 5 and 6 and may be further treated to yield other end products, for example,

Art Unit: 1797

various classes of fertilizer.)

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lloyd (US 6,083,386) in view of Mahler et al. (4,020,352)

**Regarding claim 5**, Lloyd discloses an apparatus for clarification of sludge (C1/L13-15) comprising, a clarification equipment of sludge consisting of a solid-liquid separator (Fig 1, C3/L66 - C4/L1-8; See inclined screen separator 5 and roller press separator 6) and a first filtration apparatus (Fig 1, C4/L13-14; See first filter 8) which separates waste fluid raw solution. The reference further discloses (Fig 1, C4/L39-45) that filter feed line (15) leads to a first pathogen treatment tank (16), which, in this embodiment, is equipped with a chlorinator (17). The stream flowing from the first pathogen treatment tank (16) is pathogen-free wash water, and may be treated using an odor control injection system (24) before it feeds into the flush tank (2). Additionally, Lloyd discloses that (C7/L31-36) pathogen removal can be accomplished using a variety of processes known to those of ordinary skill in the art, including chlorination, oxygenation, reverse osmosis and UV radiation.

Lloyd does not explicitly disclose an ozone treating apparatus which carry out ozone treatment of the obtained liquid state product nor does he disclose a specific ray treatment apparatus which irradiates specific ray, wherein, said specific ray treatment apparatus comprises a guide plate so as the liquid state treated product to flow spirally between specific ray lamps arranged in parallel.

While Lloyd does not explicitly disclose an ozone treating apparatus which

Art Unit: 1797

carries out ozone treatment of the obtained liquid state product, the reference does disclose (Fig 1,C4/L43-45) an odor control injection system 24. It is well known that ozone treatment of a wastewater stream oxidizes color causing and odor causing materials. It would have been obvious for one of ordinary skill in the art to choose an ozonating system as the unspecified odor control injection system.

Mahler discloses a specific ray treatment apparatus (C1/L7-11; See system for irradiating flowable material, particularly sewage sludge) which irradiates specific ray, wherein, said specific ray treatment apparatus comprises a guide plate (Fig 2 insert 7) so as the liquid state treated product to flow spirally (Fig 2 spiral channel 8) between specific ray lamps arranged in parallel (Fig 2 – see representative lamps 11 inside holding sleeves 10. Material flows in through 14, enters the spiral guide at the bottom center 6, flows in a spiral fashion past parallel irradiation lamps 11 and exits 18 at the top outside of the spiral guide plate).

Lloyd and Mahler are combinable since they both deal with the same field of endeavor, namely treatment of sludge.

Given that 1) Lloyd recognizes the need for pathogen removal in that the pictured embodiment shows a chlorinating system (Fig 1 – 16 and 17) and that Lloyd discloses that pathogen removal can be accomplished using a variety of processes known to those of ordinary skill in the art, including UV radiation, it would have been obvious to one of ordinary skill in the art at the time of the invention to replace Lloyd's pathogen removal system (Fig 1- 16,17 ) with Mahler's irradiating system choosing sterilizing UV radiation sources (254 nm), in order to avoid using the chlorinating chemicals and

Art Unit: 1797

contacting tank (and time) necessary in Lloyd's shown embodiment.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL J. DURAND whose telephone number is (571)270-7076. The examiner can normally be reached on Mon - Thurs: 7:30 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DUANE SMITH can be reached on (571)272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew O Savage/  
Primary Examiner, Art Unit 1797

/PJD/